

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2048-11-20T09:15:53.850
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3424409551457002496
 2Mass ID (if available) : 05535417+2257392

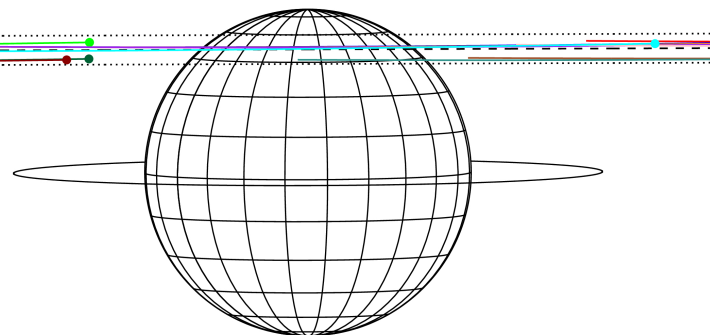
Jupiter 2048-11-20T09:15:53 K9.64 G13.15 Pgt

ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 9.636
 G magnitude : 13.148
 RP magnitude : 12.162
 BP magnitude : 14.146
 DUPflag : 0
 Distance (au) : 4.221
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.93
 Sun-Target sep (deg) : 149.44
 Sun-Moon sep (deg) : 31.60
 B (ring opening deg) : 2.54
 PA of pole (deg) : 0.18
 Pole direction: RA (deg): 268.05736
 Dec (deg): 64.49721
 C/A sky separation (") : 17.609
 C/A sky separation (km) : 53909.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



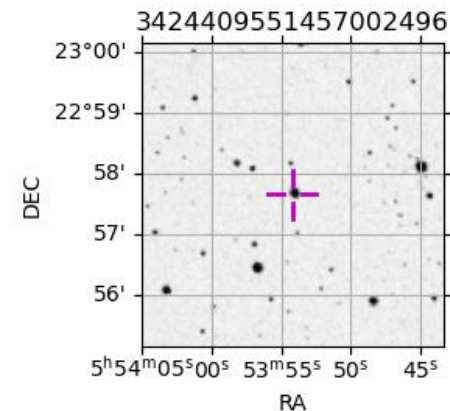
Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 MSO



2048-11-20T09:15:53.8500 a: 05 53 54.2085 s: +22 57 39.0303 C/A ***** PA 180.18 deg v_sky -12.93 km/s D 04.22 AU
 Credit: Styled after SORA/Lucky Star

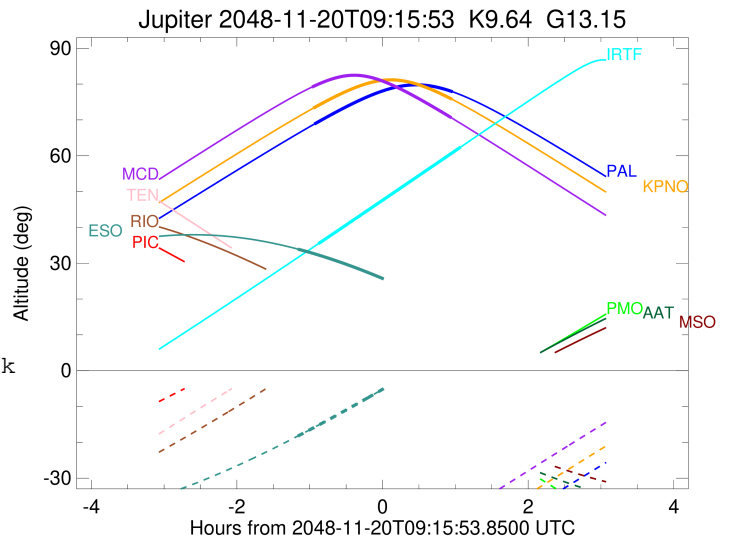
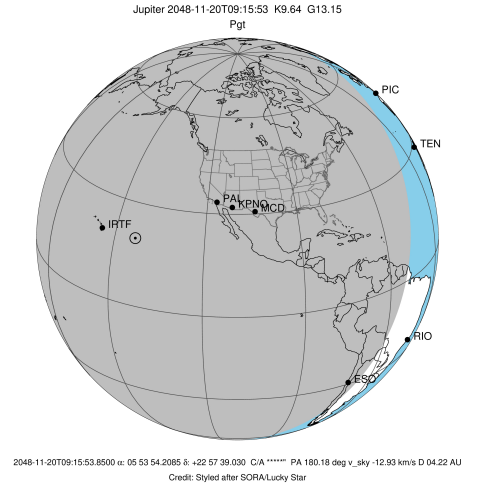
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	NOV 20 08:19 - NOV 20 10:13	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	NOV 20 08:18 - NOV 20 10:13	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	NOV 20 08:17 - NOV 20 10:12	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	NOV 20 08:23 - NOV 20 10:20	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	NOV 20 08:06 - NOV 20 08:06	Pin
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-20T09:16:48.020
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 3424409551457002496
2Mass ID (if available) : 05535417+2257392
ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.636
G magnitude           : 13.148
RP magnitude          : 12.162
BP magnitude          : 14.146
DUPflag              : 0
Distance (au)         : 4.221
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.93
Sun-Target sep (deg)  : 149.44
Sun-Moon sep (deg)   : 31.98
B (ring opening deg) : 2.54
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (" ) : 17.982
C/A sky separation (km) : 55049.0
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

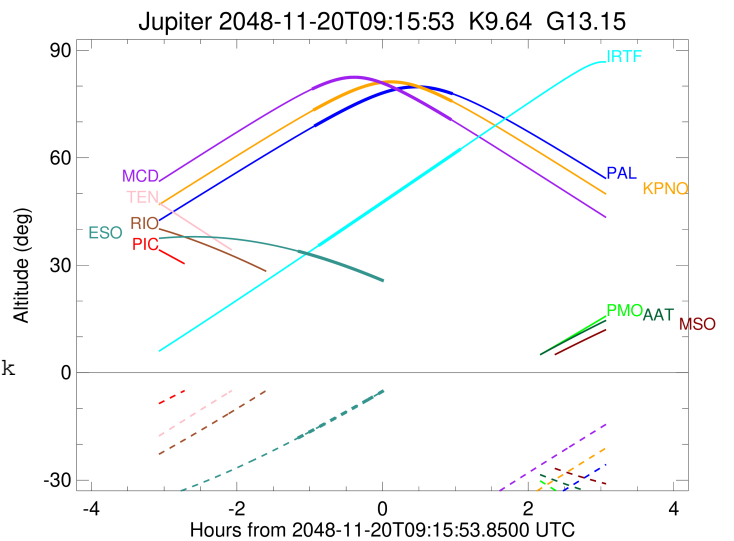
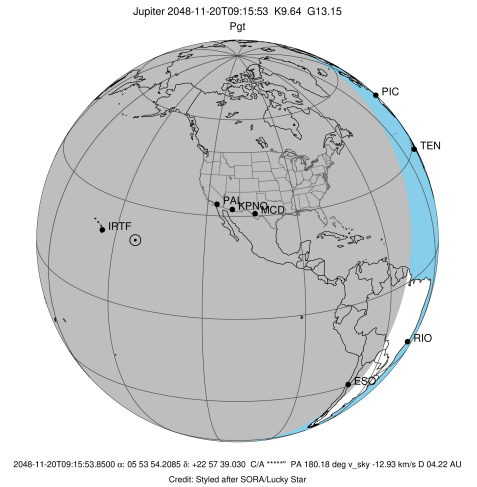


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-20T08:19:45.393	68.83	-73.10	71486.7	50.43	54.01
Jupiter	E	2048-11-20T10:13:45.021	77.83	-51.95	71486.7	50.31	53.89

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-20T09:16:07.240
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 3424409551457002496
2Mass ID (if available) : 05535417+2257392
ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.636
G magnitude           : 13.148
RP magnitude          : 12.162
BP magnitude          : 14.146
DUPflag              : 0
Distance (au)         : 4.221
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.93
Sun-Target sep (deg)  : 149.44
Sun-Moon sep (deg)    : 32.04
B (ring opening deg) : 2.54
PA of pole (deg)      : 0.18
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 17.929
C/A sky separation (km) : 54887.0
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

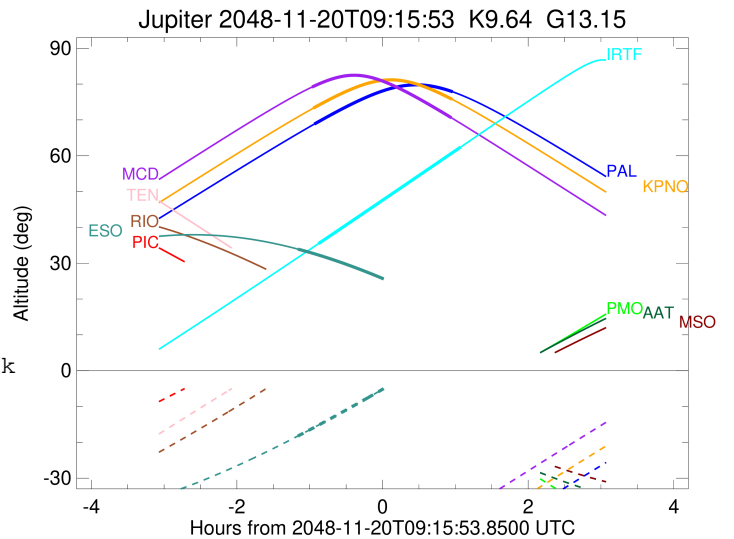
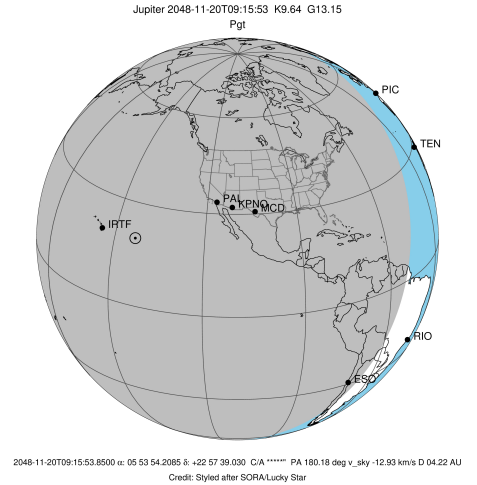


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-20T08:18:53.349	73.27	-70.84	71486.8	50.18	53.76
Jupiter	E	2048-11-20T10:13:17.739	75.73	-47.83	71486.8	50.17	53.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-20T09:15:06.750
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : MCD
Location            : McDonald Obs. 2.7m
Latitude (deg)      : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)       : 2.075
Gaia source ID      : 3424409551457002496
2Mass ID (if available) : 05535417+2257392
ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s
RUWE (>1.4 is poor) : 1.01
K magnitude         : 9.636
G magnitude         : 13.148
RP magnitude        : 12.162
BP magnitude        : 14.146
DUPflag            : 0
Distance (au)       : 4.221
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.93
Sun-Target sep (deg) : 149.44
Sun-Moon sep (deg)  : 32.13
B (ring opening deg) : 2.54
PA of pole (deg)    : 0.18
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 17.887
C/A sky separation (km) : 54760.6
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

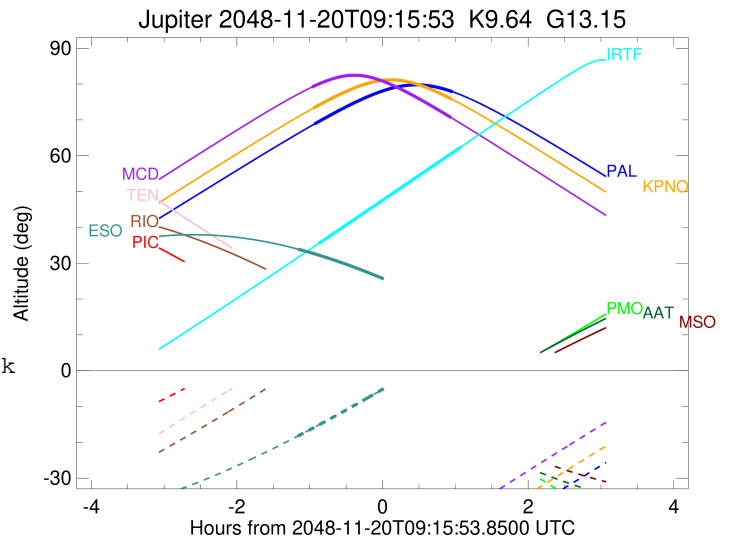
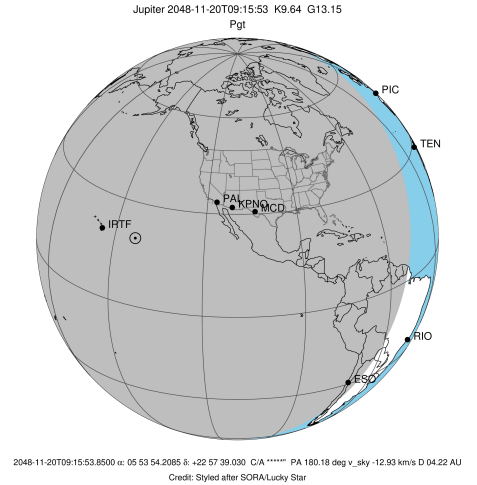


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-20T08:17:44.089	79.15	-65.87	71486.8	49.93	53.52
Jupiter	E	2048-11-20T10:12:29.395	70.63	-41.58	71486.8	50.09	53.68

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-20T09:21:54.130
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 3424409551457002496
2Mass ID (if available) : 05535417+2257392
ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 9.636
G magnitude          : 13.148
RP magnitude         : 12.162
BP magnitude         : 14.146
DUPflag             : 0
Distance (au)       : 4.221
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.93
Sun-Target sep (deg) : 149.44
Sun-Moon sep (deg)  : 31.42
B (ring opening deg) : 2.54
PA of pole (deg)    : 0.18
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (" ) : 17.696
C/A sky separation (km) : 54174.7
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

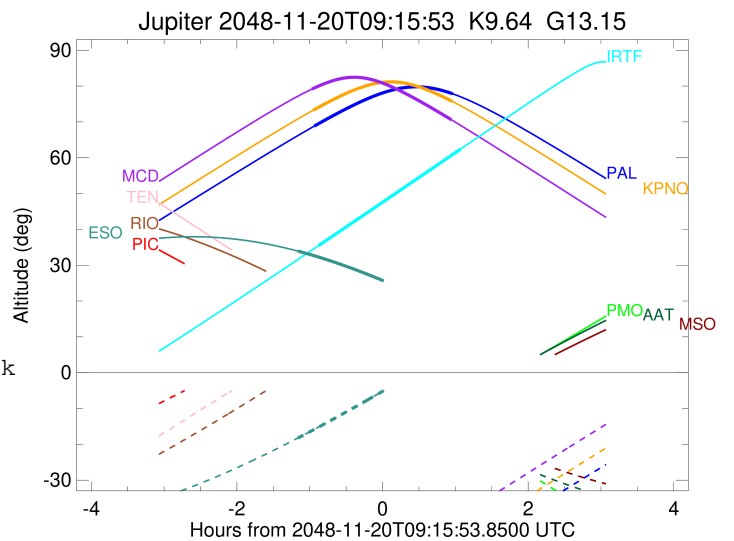
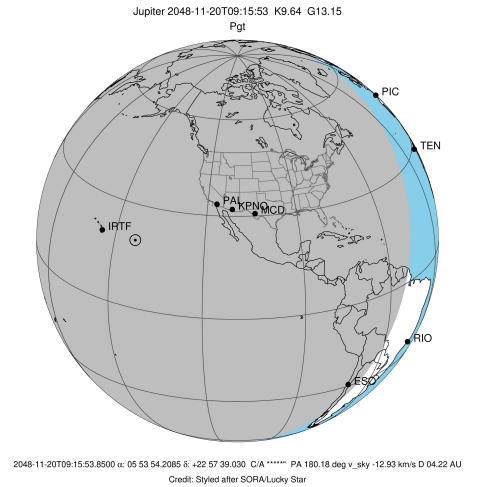


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-20T08:23:05.410	35.44	-65.47	71486.8	49.77	53.37
Jupiter	E	2048-11-20T10:20:18.790	62.41	-86.98	71487.0	48.78	52.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-20T09:10:57.520
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : ESO
Location              : European Southern Obs. (3.6m)
Latitude (deg)        : -29.26097
E. Longitude (deg)    : 289.26831
Altitude (km)         : 2.400
Gaia source ID        : 3424409551457002496
2Mass ID (if available) : 05535417+2257392
ICRS Star Coord at Epoch: 05h 53m 54.20849s +22:57:39.03034s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.636
G magnitude           : 13.148
RP magnitude          : 12.162
BP magnitude          : 14.146
DUPflag              : 0
Distance (au)         : 4.221
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.93
Sun-Target sep (deg)  : 149.44
Sun-Moon sep (deg)    : 32.27
B (ring opening deg) : 2.54
PA of pole (deg)      : 0.18
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 16.126
C/A sky separation (km) : 49369.5
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-20T08:06:08.030	33.93	-18.25	71487.8	43.27	46.99
Jupiter	E	2048-11-20T10:16:04.914	16.30	6.93x	71487.7	44.13	47.84